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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/240,275	01/29/1999	HARVEY L. BERGER	12-0892	7177

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EXAMINER

KIM, HEECHUL

ART UNIT

PAPER NUMBER

2634

DATE MAILED: 02/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/240,275

Applicant(s)

BERGER ET AL.

Examiner

H. Kim

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 6 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 January 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because the third diagram is not labeled. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Specification*

2. The disclosure is objected to because of the following informalities:  
The reference number, 24 of page 2 (line 22) in the specification does not match with the number in the figure 1.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims above, they recite the limitation "divided signals" in the claims 3 and 13. However, there is insufficient antecedent basis for this limitation in the claims.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenberg (US Pat. 5,519,356) in view of Patel et al. (US Pat. 5,491,698).

Regarding 1, 5, 11 and 15, the Greenberg reference shows means for receiving modulated signals (see figure 1) and means for determining the distance of the said received signals relative to predetermined decision boundaries (see figure 8). However it does not teach means for adjusting predetermined boundaries as a function of distance and means for decoding signals to the adjusted boundaries. The Patel et al. reference teaches adjusting decision boundaries and constellations so that to improve the bit error rate performance (see col. 2, line 67 through col. 3, line 4, and col. 3, line 13-20). One of ordinary skill in the art would have been motivated to modify the predetermined decision boundaries in order to improve the error performance of the demodulator.

Regarding claims 2, 6, 12 and 16, it is obvious and only logical that adjusted boundaries or adjusted reference constellations be mapped into a decision criterion because of the changed frame of decision reference from the original (predetermined).

Regarding claims 3, 7, 13, and 17, the Patel reference further shows counters (see figure 6B and 7B) for counting a total event-triggering occurrence with respect to a certain pre-selected sequence of data (col. 11, line 22 through col. 12, line 24).

Regarding claims 4, 8, 14, and 18, the Patel et al. reference suggests means and method of adjusting decision boundaries (constellation points) such that a substantially equal number of error events occur (thereby equidistance between the constellation points) at each decision boundaries. This is to adjust decision regions such that select decision boundaries where the BER rate is at the minimum. Therefore, it would have been obvious to the ordinary skill in the art to adopt this method in order to find the best decision boundaries (constellation points) which results in improved error rate performance.

Regarding claims 9, 10, 19 and 20, the Greenberg reference teaches adjusting reference constellations in the complex domain (both I (horizontally) and Q (vertically)) (see col. 3 line 21-40) in order to find the best constellation points which would result in the lowest BER.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Amrany, US Pat. 5,384,810
- b. Lim, US Pat. 5,654,986
- c. Greenberg, US Pat. 5,710,793


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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heechul Kim whose telephone number (703) 305-4384. The examiner can normally be reached on M-F 7:30 – 3:30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached on (703) 305-4714. The fax number for this group is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is (703) 305-4700.

HK

January 30, 2002



STEPHEN CHIN  
SUPERVISORY PATENT EXAMINER  
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